AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of constructing poly-nucleotides, comprising the steps of:

ligating strands of DNA using a ligase and a complementary sequence as a template ~~and a ligase~~ , wherein said step of ligating utilizes hybridization to a complementary template which has been tethered to a ligase enzyme.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Original) The method of constructing poly-nucleotides of claim 1 including repeatedly adding single-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

18. (Original) The method of constructing poly-nucleotides of claim 1 including repeatedly adding double-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

19. (Cancelled)

20. (Cancelled)

21. (Currently Amended) A method of ~~making~~ constructing very long, double-stranded synthetic poly-nucleotides comprising the steps of:

providing a multiplicity of oligonucleotides,

sequentially hybridizing said oligonucleotides to each other, and

enzymatic ligating said oligonucleotides to provide a contiguous piece of ~~PCR-ready~~ DNA of predetermined sequence, wherein said step of enzymatic ligating utilizes hybridization to a complementary template which has been tethered to a ligase enzyme.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Original) The method of constructing poly-nucleotides of claim 21 including repeatedly adding single-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

39. (Original) The method of constructing poly-nucleotides of claim 21 including repeatedly adding double-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

40. (Original) The method of constructing poly-nucleotides of claim 21 including repeatedly adding either single-stranded DNA or double-stranded DNA to a growing piece of double-stranded DNA.

41. (Cancelled)

42. (Currently Amended) A method of ~~making~~ constructing very long, double-stranded synthetic poly-nucleotides comprising the steps of:

providing a multiplicity of short single-stranded oligonucleotides,

sequentially hybridizing said short single-stranded oligonucleotides to each other, and

enzymatic ligating said short single-stranded oligonucleotides to provide a contiguous piece of ~~PCR-ready~~ double stranded DNA of predetermined sequence, wherein said step of enzymatic ligating utilizes hybridization to a complementary template which has been tethered to a ligase enzyme.

43. (Cancelled)

44. (Cancelled)

45. (Cancelled)

46. (Cancelled)

47. (Cancelled)

48. (Cancelled)

49. (Cancelled)

50. (Cancelled)

51. (Cancelled)

52. (Cancelled)

53. (Cancelled)

54. (Cancelled)

55. (Cancelled)

56. (Cancelled)

57. (Cancelled)

58. (Cancelled)

59. (Original) The method of constructing poly-nucleotides of claim 42 including repeatedly adding single-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

60. (Original) The method of constructing poly-nucleotides of claim 42 including repeatedly adding double-stranded DNA to a growing piece of double-stranded DNA which is tethered to the ligase enzyme.

61. (Cancelled)

62. (Cancelled)